REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 3-4, 8, 10, 12, 15-28, and 31-33 are currently pending, Claims 1, 27 and 28 amended, and Claims 31-33 added by way of the present amendment.

In the outstanding Office Action, Claims 1, 3-4, 7-8, 10, 12, 15-23 and 27-28 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,545, 245 to Yeh et al. in view of U.S. 2004/0109263 to Suda et al., and further in view of U.S. 7,041,608 to Sieber et al. or U.S. 6,057,247 to Imai et al.; and Claims 24-26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh et al. in view of Suda et al. and Seiber et al. or Imai et al., and further in view of U.S. 5,403,434 to Moleshi.

Turning now to the merits, in order to expedite issuance of a patent in this case, Claims 1, 27 and 28 are amended to clarify the patentable features of the present invention over the cited references. Specifically, Applicant's independent Claim 1 recites that the process gas "consisting of CO or CO in combination with inert Ar gas," and "maintaining a pressure between 10 mTorr and 100 mTorr." Independent Claims 27 and 28 recite similar features in system and means plus function claim format. As discussed in the previous response, Figures 5-7 of Applicants' specification show a standard Argon plus O_2 plasma as a conventional baseline process to which other processes are compared, and Applicants' specification explains the benefits of eliminating O_2 from the process gas and in particular shows using CO or CO and Ar gas at 100 mTorr.

In particular, Suda et al. mentions that dry etching for ***etching a substrate*** may be performed using "other gases that contain oxygen, such as CO, CO_2, NO, etc. that can

generate oxygen plasma,"[1] and Sieber et al. states that "plasmas containing oxygen process gas for cleaning the fluorocarbon residue may use plasmas containing oxygen or . . . use some combination of gases in the plasma such that fluorine is removed (e.g. in the form of HF) from the fluorocarbon and the remaining carbon-bearing materials oxidized to produce volatile species such as CO and CO_2."[2]

It is Applicants' position that this disclosure provides one of ordinary skill in the art with an essentially limitless range of oxygen gases including any gas containing oxygen and which can be used to generate a plasma for etching a substrate device, and there is no indication in the cited references that using CO in a plasma cleaning process for a semiconductor processing chamber provides any advantage over the broad range of possible gases including oxygen. Further, column 19, lines 19-21 of Imai et al. states, "carbon oxide and oxygen gases are introduced into the reaction chamber 107 at respective flow rates of 200 sccm or more and 80 sccm or more (in step S305)." Thus, Imai et al. also does not disclose process gas consisting of CO or CO in combination with inert Ar gas as recited in presently amended independent Claims 1, 27 and 28.

Nevertheless, the Response to Arguments portion of the Office Action states,

> Further, the limitation of having the argued advantages of the CO and Ar are not present in the claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. [citation omitted].

In order to expedite issuance of a patent in this case, Applicants have amended Claims 1, 27 and 28 to address this comment. For example, amended Claim 1 recites "the method of removing fluoro-carbon polymer chamber residue using a process gas consisting of CO or CO in combination with Ar results in reduced chamber residue when compared to a method of

[1] Suda et al. at paragraph [0082].
[2] Sieber et al. at col. 11, lines 10-20.

removing fluoro-carbon polymer chamber residue using a process gas consisting of Ar in combination with O_2." Claims 27 and 28 are similarly amended. As discussed in Applicants' specification, Fig. 5 shows that WDC processes utilizing pure CO gas or CO + Ar gases resulted in reduced fluorine signals, and therefore reduced chamber deposits, in the process chamber, when compared to the conventional Ar + O_2 dry cleaning plasma process. When Ar was used with CO, equal gas flows of CO and Ar (500 sccm each) resulted in the lowest fluorine signal. Thus, independent Claims 1 27 and 28 now recite the specific advantage achieved by the process gases recited in these claims. As noted above, the cited references to Suda et al. , Sieber et al. and Imai et al. do not teach the recited process gas and pressure range, and thus, these references cannot disclose the advantageous feature now explicitly recited in the claims.

The remaining secondary references are cited for teachings of the dependent claims and cannot correct the deficiencies of Suda et al. , Sieber et al. and Imai et al. Thus, for the reasons discussed above, Claims 1, 27 and 28 patentably define over the cited references. As the remaining pending claims depend from these distinguished claims, the dependent claims also patentable define over the cited references. Nevertheless, Claims 31-33 further specify that the process gas "consists of equal flows of CO and Ar to achieve greater reduction in fluoro-carbon polymer chamber residue when compared to a method using process gas consisting of non-equal flows CO and Ar." Page 12, lines 3-12 provide support for this advantage. None of the cited references disclose this more specific feature, and thus, Claims 31-33 provide a further basis for patentability over the references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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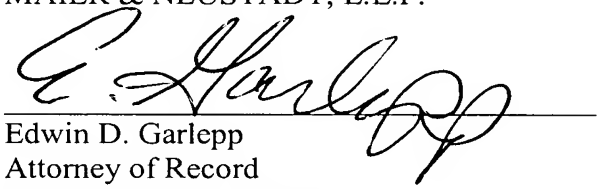

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